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US ARMY

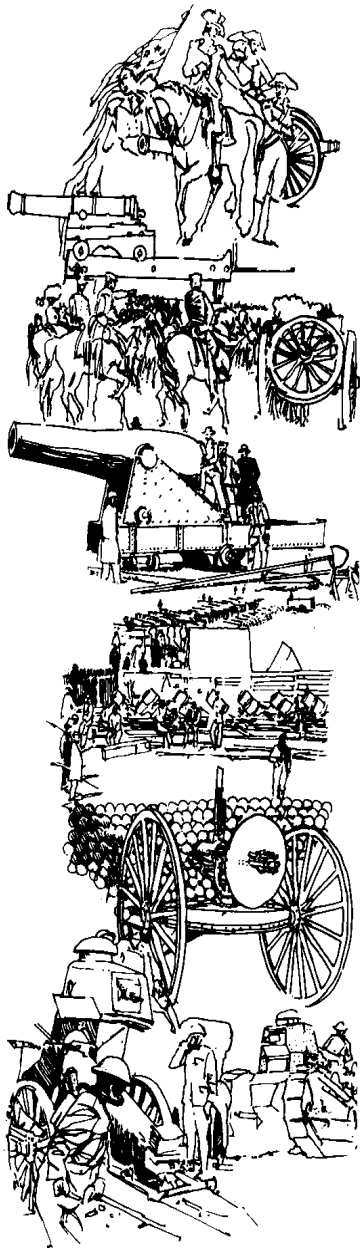
ORDNANCE

CENTER AND SCHOOL

HISTORY OF THE ORDNANCE CORPS

ABERDEEN PROVING GROUND, MARYLAND
21005

History of the Ordnance Corps



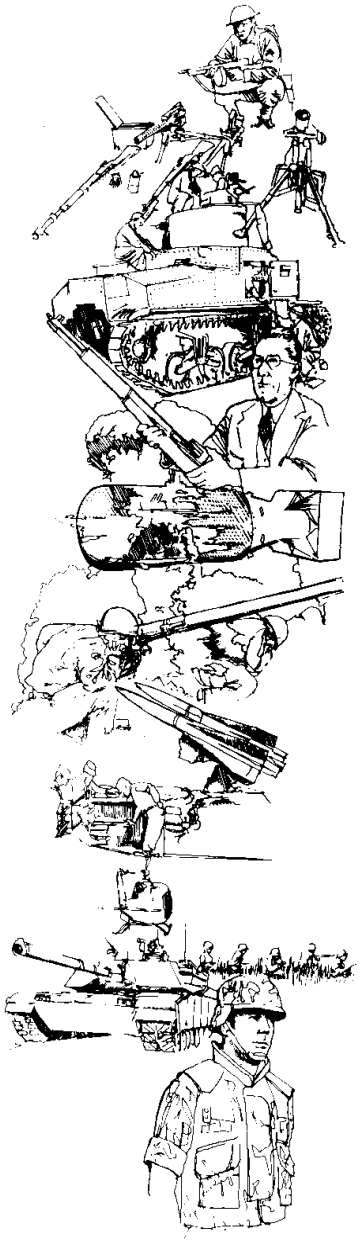
We the People introduces our Constitution, a document of great vision which as served as the basis for our government for more than 220 years.

The history of the United States Army Ordnance Corps could also well begin with the words "We The People." The formation of a distinct Ordnance Corps was also a great vision. It was a vision of a specialized professional team of dedicated craftsmen, artisans, thinkers, and developers who would come together to provide our Army with the implements to defend our nation. Since 1812, this vision has become a reality. What began as a small group of providers to a young Army has indeed become a strong vital Corps living the motto *Armament for Peace* in support of our great Army.

From the early days before we were a nation, when our ordnance ancestors were first called upon to supply cannon and musket to the colonial Army, to today as we cross the threshold of the next century, the history of our Corps has paralleled the industrial development of our nation. As our country matured and prospered, we built an industrialized society from which inventions and machines sprung forth to sustain and maintain our forces, thus ensuring that our nation had a credible shield of freedom.

We are the Ordnance Corps.

We are Ordnance. In our unity lies our strength. We were the bullet makers during the War of 1812. We made cannons in the Civil War. We supplied ammunition to two fronts in 1898 as our country became a global power in the Spanish-American War.



Soon after, we labored mightily to supply weapons and ammunition to our forces engaged in the first war "to end all wars" -- World War I. We worked in the mud of France to keep our scarce equipment operating and gave our all until the Armistice in November 1918.

But there was no time to rest. We put weapons from that great war in storage, ready for immediate use and at the same time started a developmental program designed to never again allow our country to be caught unprepared by a foreign adversary.

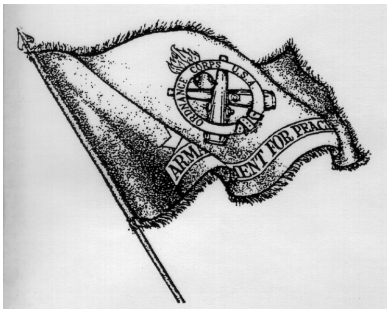
During the second great war, we toiled in the Pacific jungles and island hopped to keep ammunition flowing and the weapons working. We unloaded shells on Omaha Beach while the Infantry was still trying to gain standing room. We protected our ammunition at Anzio from constant artillery shelling and aerial strafing. Through the hedgerows of France, to the Elbe River, we served the line on many fronts and supported our allies with equipment and munitions to bring World War II to a successful close in Europe.

In the Pacific, our efforts in the development of the Atomic Age soon ended that portion of the war. New problems demanded new solutions, and we gave birth to the science of explosive ordnance disposal. At war's end, we also began an ambitious adventure into the new era of rocketry and missilery and computers. But our job was not over.

Soon, we were again serving where only the brave stay long -- another battlefield. In the 1950s, in Korea, we kept aging equipment going a little bit longer and provided ammunition for one of the most intensive artillery battles of our history. In sub-zero temperatures, we fixed the tanks and trucks to fight one more day, one more week, one more war.

Within 10 years, the temperature changed, but the mission stayed the same. We sent our recovery teams to rescue vehicles broken down on the suddenly lonesome trails of Vietnam and other remote jungle locations in Southeast Asia. The ammunition used per gun in Vietnam grew to unexpected heights, but still we kept on. Our ordnance missile experts kept the radars running and the rockets ready until the last battle.

When the Berlin Wall fell and the Cold War ended, we were there, continuing in our role as



Since the end of the Cold War, deployments increased nearly 300% as our Nation continued to respond to support missions in Southwest Asia, Grenada, Panama, Somalia, Haiti, Bosnia and South America, to name a few. As did our forefathers, we continued to provide "Service to the line, on the line, on time."

Today we stand, active and reserve, government civilians, retirees and family members, linked with our industrial allies, prepared, as always, to provide America's ARMAMENT FOR PEACE as we cross the threshold of the future on our path to the 21st century.

We are Ordnance. Together we are strong.

In the following pages we present snapshots of our history, a history of service, sacrifice, and selflessness.

The Ordnance Regimental Crest

The flaming bomb with crossed cannons is the oldest military device of the United States Army. Adopted in May 1833, it was first used by the Ordnance Department on a button. The flaming bomb with crossed cannons was also used by the Artillery until 1834, when they adopted their traditional crossed cannons.

The flaming bomb first appeared by itself in 1848. Before its adoption by the Army, the flaming bomb was the insignia of the British Grenadier Guards, Royal Horse Artillery and the Royal Engineers. Today, it represents the armament of days gone by, while the energy it connotes is applicable to our modern weapons.

The Ordnance escutcheon, consisting of crossed cannons, the flaming bomb and a cannoneers' belt over and across the cannons, embossed with the words "Ordnance Department U. S. A." was also adopted in 1833. In 1950, the wording was changed to read "Ordnance Corps U. S. A." The belt represents the traditional association between munitions and armament. The white background symbolizes the peace in our motto "Armament for Peace."

On October 28, 1985, the Ordnance regimental system was approved and the branch insignia was adopted as the Ordnance regimental crest. When wearing this device, one wears an emblem that represents the rich and proud tradition of the United States Army Ordnance Corps which stretches back to May 14, 1812.

HISTORY of ORDNANCE

ARMAMENT FOR PEACE

Historical Sketches

1775 ~ 1850

- The Kentucky rifle, developed by the Germans and Swiss who settled in Pennsylvania, reaches its perfection in 1750.
- Continental Congress passes Act of June 15, 1775, authorizing a Commissary General of Artillery Stores. Ezekiel Cheever appointed.
- On Sept. 8, 1775, Congress creates a “Secret Committee,” appointing nine members to procure powder, artillery, muskets and other armament.
- Characteristics of muskets in 1775: 3/4-inch bore; barrel length of 3 feet, 8 inches; 18-inch bayonet blade.
- A Provincial gun-lock factory is established in Philadelphia in 1776.
- On Feb. 29, 1776, Congress authorizes purchase of 250 12-pounders, 60 9-pounders and 62 4-pounders.
- The first munitions storage is established at Carlisle, PA, and the first arsenal and armory are placed in operation at Springfield, MA, in 1777.
- In January 1777, Thomas Butler is appointed

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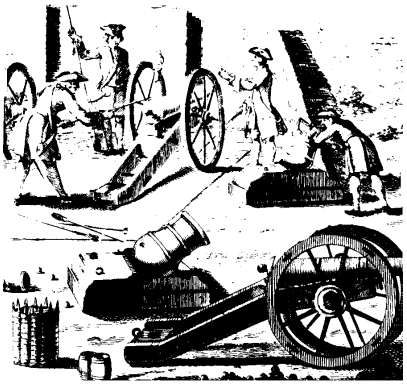


Revolutionary War cannon and cast iron mortar.

HENRY B. MACHEN
202 RIVERSIDE DRIVE
NEW YORK CITY, N. Y.

September 22, 1923.

THE EDITOR,
ARMY ORDNANCE,
SIR:

Recently when passing through the churchyard of Old St. Paul's Church on lower Broadway, I noticed the following inscription on a tombstone located in the front row facing the main entrance to the church:

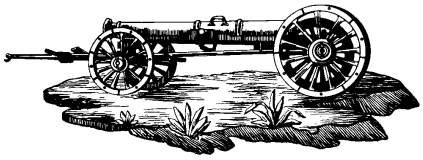
HERE LIES THE BODY OF
Charles Hadley
LATE ARMOURER TO YE OFFICE
OF ORDNANCE WHO DEPARTED
THIS LIFE THE 26 OF JUNE 1775
AGED 48 YEARS

The church was in those days next to Old Trinity in prominence and the location of the late armorer's grave indicates that he too stood well in the community. It is of interest as showing the position of the Ordnance Office 148 years ago.

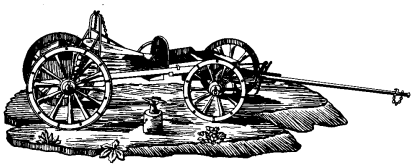
Very sincerely yours,

HENRY B. MACHEN,
Major Ord. O. R. C.

Ruins of a Revolutionary War-era munitions plant. Built in 1765 near Hellam, PA, this furnace was used for casting cannon and cannon balls for the Continental Army. James Smith, a signer of the Declaration of Independence, was at one time owner of the furnace.



Transport wagon for field guns in use at the time of the American Revolution.



Field forge of the late 18th century -- ancestor of the mobile repair shop.

The "Board of War and Ordnance," consisting of five members of Congress, is created June 12, 1776. On Oct. 18, 1777, Congress provides that the board should consist of persons (without military ranks) other than members of Congress.

The name "Ordnance Department" is first used by Congress in a resolution passed Feb. 11, 1778, that authorizes a regiment of artificers under COL Benjamin Flower.

On Feb. 18, 1779, Congress revamps the field organization of the Ordnance Department, placing the entire responsibility for ordnance business with troops in the field upon the "commanding officer of artillery of the United States."

Estimation of arms to be repaired after the Revolutionary War set at an average of $1.50 each.

In April 1794, Congress appropriates $50,000 to establish three or four arsenals, of which Springfield and Harpers Ferry were to be two.

Appropriation of $25,000 is made March 3, 1803, to establish one or more arsenals on the "western waters." In 1808, the President is authorized to purchase sites for and build "such additional arsenals and manufactories of arms as he may deem expedient." A law that limits the total workmen to 100 in all the armories is repealed.

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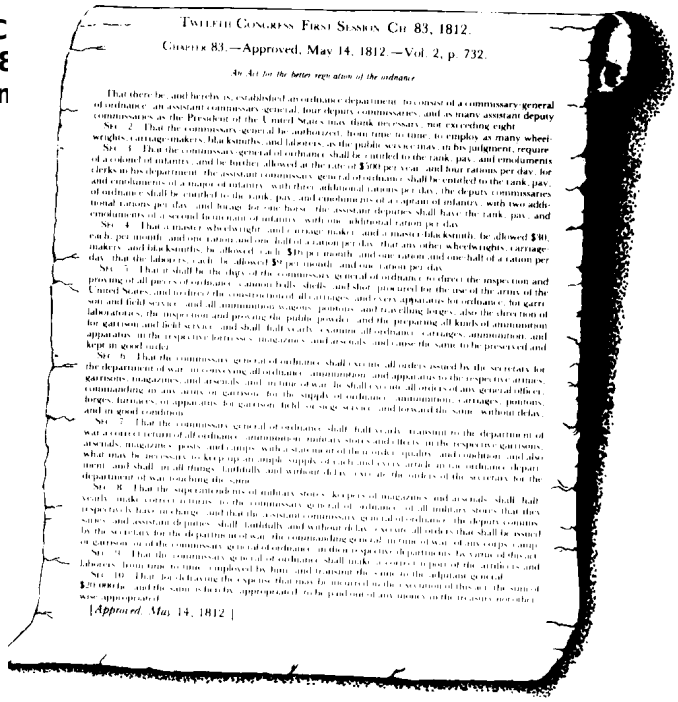


TWELFTH CONGRESS. FIRST SESSION. CH. 83, 1812.

CHAPTER 83.—Approved, May 14, 1812.—Vol. 2, p. 732.

An Act for the better organization of the ordnance.

That there be, and hereby is, established an ordnance department, to consist of a commissary-general of ordnance, an assistant commissary-general, four deputy commissaries, and as many assistant deputy commissaries as the President of the United States may think necessary, not exceeding eight.

SEC. 2. That the commissary-general be authorized, from time to time, to employ as many wheelwrights, carriage-makers, blacksmiths, and laborers, as the public service may, in his judgment, require.

SEC. 3. That the commissary-general of ordnance shall be entitled to the rank, pay, and emoluments of a colonel of infantry, and be further allowed at the rate of $300 per year, and four rations per day, for clerks in his department; the assistant commissary-general of ordnance shall be entitled to the rank, pay, and emoluments of a major of infantry, with three additional rations per day; the deputy commissaries of ordnance shall be entitled to the rank, pay, and emoluments of a captain of infantry, with two additional rations per day, and forage for one horse; the assistant deputies shall have the rank, pay, and emoluments of a second lieutenant of infantry, with one additional ration per day.

SEC. 4. That a master wheelwright, and a carriage-maker, and a master blacksmith, be allowed $30, each, per month, and one ration, and one-half of a ration per day; that any other wheelwrights, carriage-makers, and blacksmiths, be allowed, each, $16 per month, and one ration, and one-half of a ration per day; that the laborers, each, be allowed $9 per month, and one ration, and one-half of a ration per day.

SEC. 5. That it shall be the duty of the commissary-general of ordnance to direct the inspection and proving of all pieces of ordnance, cannon-balls, shells, and shot, procured for the use of the arms of the United States, and to direct the construction of all carriages, and every apparatus for ordnance, for garrison and field service, and all ammunition wagons, pontoons, and travelling forges; also the direction of laboratories, the inspection and proving the public powder, and the preparing all kinds of ammunition for garrison and field service, and shall field-yearly examine all ordnance, carriages, ammunition, and apparatus, in the respective fortresses, magazines, and arsenals, and cause the same to be preserved and kept in good order.

SEC. 6. That the commissary-general of ordnance shall execute all orders issued by the secretary for the department of war, in conveying all ordnance, ammunition, and apparatus to the respective arrivals, garrisons, magazines, and arsenals, and in time of war he shall execute all orders of any general officer commanding in any army or garrison, for the supply of ordnance, ammunition, carriages, pontoons, forges, furnaces, or apparatus for garrison, field, or siege service, and forward the same without delay, and in good condition.

SEC. 7. That the commissary-general of ordnance shall half-yearly transmit to the department of war a correct return of all ordnance, ammunition, military stores, and effects, in the respective garrisons, arsenals, magazines, posts, and depots, with a separate statement of their order, quality, and condition, and also what may be necessary to keep up an ample supply of each, and every article in the ordnance department, and shall, in all things, faithfully, and without delay, execute all the orders of the secretary for the department of war touching the same.

SEC. 8. That the superintendents of military stores, keepers of magazines, and arsenals, shall half-yearly make correct returns, to the commissary-general of ordnance, of all military stores that they respectively have in charge, and that the assistant commissary-general of ordnance, the deputy commissaries, and assistant deputies, shall faithfully, and without delay, execute all orders that shall be issued by the secretary for the department of war, the commanding general in time of war, of any corps, or garrison, or of the commissary-general of ordnance, in their respective departments, by virtue of this act.

SEC. 9. That the commissary-general of ordnance shall make a contract for part of the artificers and laborers, from time to time, employed by him, and transmit the same to the adjutant-general.

SEC. 10. That for defraying the expense that may be incurred in the execution of this act, the sum of $25,000, and the same is hereby appropriated, to be paid out of any money in the treasury not otherwise appropriated.

[*Approved*, May 14, 1812.]

The Ordnance Department is created as a separate branch of the Army by the Congressional Act of May 14, 1812. COL Decius Wadsworth is the first Chief of Ordnance.

Throughout the War of 1812, most of the work at arsenals is done by enlisted Army ordnance personnel. Among items produced are fuses, rockets, percussion caps, sponges, gun carriages and accessories.

A trifle more than 12 acres of land, known as the "Arsenal at Gibbonsville," is purchased in 1813 for $2,585. It grew to be Watervliet Arsenal.

In May 1813, a small British force, numbering about 500 men, lands near the mouth of the Susquehanna River in Maryland. The loss of Cecil Furnace, a foundry used for the casting of cannons, has a major effect upon the Ordnance Department.

Mechanics and laborers employed by the Ordnance Department, though not regularly enlisted, are by 1815 paid monthly wages and given rations and a clothing allowance, the latter being the same as that allowed to privates of infantry. Master armorers receive $30 per month and 1 1/2 rations per day; wagoners, carriage makers and blacksmiths $26 per month and 1 1/2 rations per day; the pay of artificers is $13 per month and one ration, and of laborers $9 per month and one ration.

The Act of Feb. 8, 1815, establishes a colonel of the Ordnance Department to "direct the inspection and proving of all pieces of ordnance, cannon balls, shot, shells, small arms and side arms, and equipments procured for use by the armies of the United States, and to direct the construction of all cannon and carriages and every implement and apparatus for ordnance, and all ammunition wagons, travelling forges and artificers' wagons, the inspection and proving of powder and the preparation of all kinds of ammunition and ordnance stores. This, in effect, places all ordnance arsenals and depots under the colonel of Ordnance.

Title to a 900-acre island is acquired through a treaty with the chiefs of the Sac and Foc tribes in November 1804. It is situated well to the south of the main channel of the Mississippi River between Illinois and Iowa. In 1835, the island becomes the site of a western armory to be known as the Rock Island Arsenal.

The blockhouse on the site of Fort Armstrong on Rock Island, 1816.

The hostile advances of the Indian tribes from the north, following the outbreak of the War of 1812, upon the pioneer settlements in the Illinois Territory leads the government to establish, in 1816, a frontier post on the

- **In January 1817, 100 of the hall breech loaders are ordered.**

- **By the end of 1819, the following arsenals besides the two armories established in 1794 have been either purchased, built or are under construction.**

  Rome--Rome, NY..... 1813

  Allegheny--Pittsburg, PA.....1814

  Watervliet--West Troy, NY.....1814

  Bellona--Richmond, VA.....1816

  Frankford--Philadelphia, PA..... 1816

  Pikesville--Pikesville, MD.....1816

  Washington--Washington, DC.....1816

  Watertown--Watertown, MA..... 1817

  Augusta--Augusta, GA.....1817

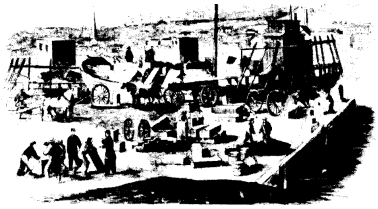
  Baton Rouge--Baton Rouge, LA..... 1819

- **In 1822, Thomas Blanchard, a foreman at the Springfield Armory, introduces a lathe for turning irregular-shaped wood. Gun stocks can now be made by machine instead of by hand.**

- **CPT John H. Hall applies the percussion lock as early as 1832, while Springfield retains the flint lock until 1842.**

- **CPT Thomas J. Rodman (later GEN), in 1844, begins a long series of experiments aimed at overcoming the difficulty in casting extremely large cannon. In a modified form, his idea of compressing metal at the surface of the bore is still used in constructing large-caliber ordnance.**

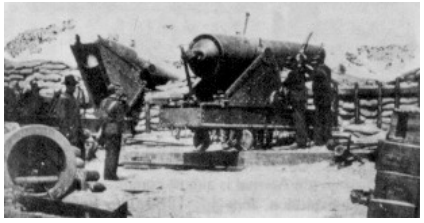
- **MAJ Alfred Mordecai is the first ordnance officer to apply scientific methods to armament research. An original member of the Ordnance Board, he publishes the group's report, titled** *Artillery for the United States Land Service*, **in 1849. He did most of the work on the first** *Ordnance Manual* **ever published by the Army (1841) and alone was responsible for its second edition (1850).**



Shipping gun carriages, ammunition and materiel from the Watervliet Arsenal wharf prior to the Civil War.

- **The model 1855 Springfield is to be the standard rifle throughout the Civil War.**

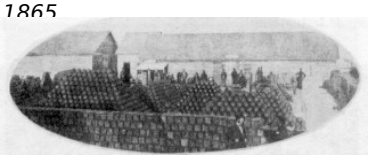
- **The number of arsenals increases to 24 in 1860.**



This photograph from the album of a Civil War photographer shows two 8-inch Parrot rifles, big guns of the Rebellion days.

Union soldiers distribute ammunition under fire, May 6, 1864

Though both sides were unprepared for war, the North had the better facilities for producing munitions. Here, workers at the Watertown Arsenal, MA, fill cartridges in 1865.



Civil War ammunition depot at Morris Island, SC, November 1864.

Three types of breech loaders have been included in the Union Army by 1861, in addition to the Springfield guns. The Spencer weapon seems to have achieved considerable success. It uses a brass cartridge case in a tubular magazine which loads from a hole in the butt plate. It can be fired rapidly, about 14 times a minute, from horseback or slightly more rapidly from the ground. This weapons leads the Rebels to say that the Yanks have a gun which they load on Sunday and shoot all week.

The initial cost of ordnance equipment to the Union Army of GEN William S. Rosecrans (total strength of about 22,000 men) is $645,000, or, in terms of cost of equipment per man, $29.30.

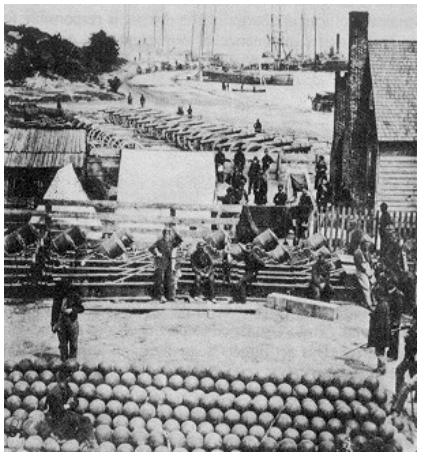
At the beginning of the Civil War, the Springfield Armory can make 800 muskets a month. Its capacity has increased rapidly so that, in October 1861, it turns out 6,900. It is expected to produce 200,000 muskets in 1862.

In 1862, Dr. Richard Gatling demonstrates the first practical machine gun. It has a firing rate of about 250-300 shots a minute. Later models would fire as many as 600 shots a minute.

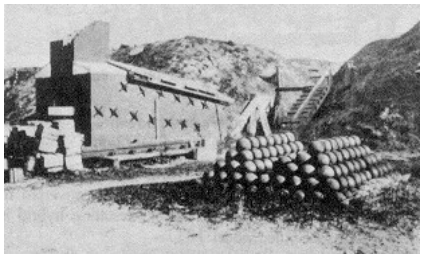
The telescopic sight appears during the Peninsular Campaign (June 1862). It is said, in the hands of experts, to be infallible at three-quarters of a mile and good at a full mile.

The Washington Arsenal is almost completely demolished by a terrific explosion, June 17, 1864. One building blew up, killing 21 girls working within and severely injuring several others. There were 108 girls at work in the main laboratory making cartridges for small

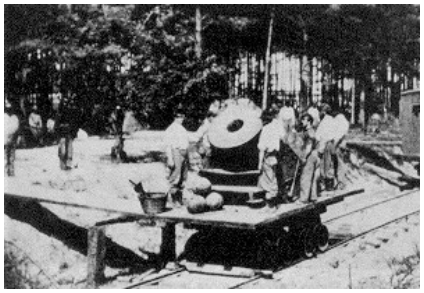
The building with the tall air furnace stack is the gun foundry at the Tredegar Iron Works, VA, in 1865. On Brown's Island (left), the Ordnance Bureau of the Confederacy, under BG Josiah Gorgas, maintains its filling and loading plant.



GEN Grant's supply depot at City Point, VA. (Photo by Mathew Brady, June 1865)



In this Civil War furnace, ball ammunition is heated before it is fired. Hot shot was first used by the British during the siege of Gibraltar (1779-1783) when, by this means, the defenders of the fortress et on fire the attacking force of French and Spanish ships.



This Civil War mortar mounted on a railway truck seems to be a prototype of the railway guns used after the turn of the century.

The first breech-loading Springfield rifle appears in 1866. It is an alteration of the 1863 muzzle-loading musket.

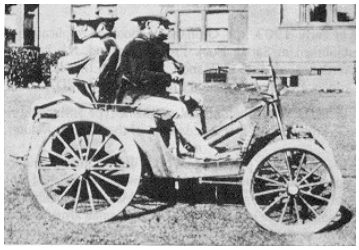
The annual inventory for June 30, 1871, shows a monetary value of property in possession of the Ordnance Department of $53,832,111.02.

According to official records, more than 90 million pounds of lead, nearly 13 million pounds of artillery projectiles and more than 26 million pounds of powder were issued to the Union Army during the Civil War.

The Ordnance Department, in 1874, establishes the nation's first proving ground at Sandy Hook, NJ.

In 1879, Congress appropriates $62,750 for a powder depot on five tracts of land in New Jersey. On Sept. 6, 1880, the reservation is designated as the "Powder Depot," later to become known as Picatinny Arsenal.

The Army, in 1888, experiments with a machine gun invented by Hiram Maxim. It is a true automatic weapon that uses the recoil from a fired cartridge to bring the next round into firing position. About the same time, John M. Browning invents a machine gun that uses escaping gas from a fired shot to actuate a mechanism that brings another shell into place. Because Maxim's gun tends to jam, the Browning machine gun is later adopted.



In 1889, COL R.P. Davidson designs and has constructed by the Charles E. Duryea Co. of Peoria, IL, this four-wheeled automobile mounting a Colt automatic gun with armor shield. This car probably is the first armed car ever built in any country.

The magazine and smokeless powder are adopted in 1892, displacing the .45-caliber Springfield with the .30-caliber Krag-Jorgensen. The Krag is a bolt-action weapon with a box magazine that holds five rounds. It is, however, not clip loading, and each round has to be inserted separately into the magazine.

In 1896, installation of big guns, many of the new disappearing-type mount, begins our seacoast defense. In 1897, production begins on the first 16-inch seacoast cannon at Watervliet Arsenal.

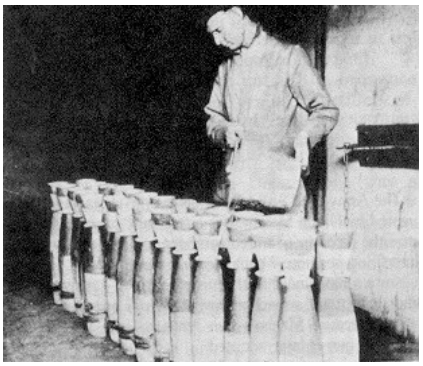
In the decade from 1890 to 1900, experiments are made on the use of hydraulic recoil brakes on mobile guns.

There are insufficient funds to manufacture a sufficient quantity of Krags to arm the entire forces fighting in the Spanish-American War (1898). At the battle of El Caney, a regiment of Massachusetts volunteers withdraws because the black-powder Springfields are ineffective against the Spanish Mausers and threw clouds of smoke which revealed their positions to the entrenched enemy.

In early 1902, the Ordnance School of Application is established at Sandy Hook Proving Ground, NJ. It is the forerunner of the Ordnance School at the United States Army Ordnance Center, Aberdeen Proving Ground, MD.

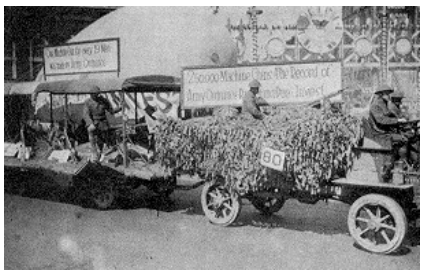
In 1903, a new bolt-action, magazine-type Springfield rifle is brought out. It is an adaptation of the German Mauser.

In the period preceding World War I, the Ordnance Department does not differ much from that established long before the Civil War. The Chief of Ordnance has divided the Ordnance Office into gun, gun carriage, small arms, finance and property divisions. The gun carriage division, for instance, looks after the design, development, procurement, construction and maintenance in the field of gun carriages. The actual work of maintenance in the field is effected by a division of the country into several armament districts. An arsenal is assigned as the headquarters of each district. The armament officer in charge of the district is responsible for the repair and maintenance of armament and carries out modification orders he receives from the Ordnance Office.

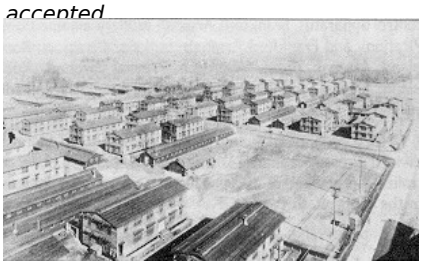


Worker at Picatinny Arsenal pours TNT into 155mm projectiles in 1903.

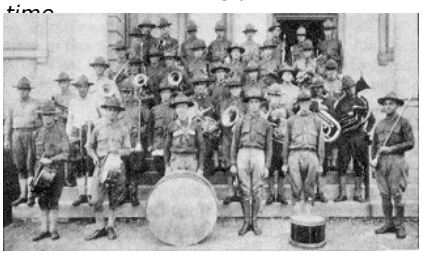
An Army supply depot in Mexico, circa 1916, during BG John J. Pershing's chase of Pancho Villa.



As the United States becomes more involved in World War I, ordnance officers tour New England and the manufacturing areas of the Midwest in an attempt to fill the thin ranks of the Ordnance Corps. About 10 percent of the men interviewed are accepted.



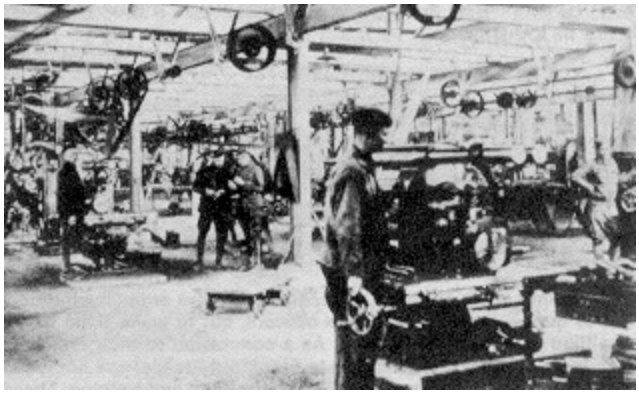
Raritan Arsenal, Metuchen, NJ, in 1918, with the assembly plant in the foreground. Raritan trains the many ordnance specialties required for World War I, and is also the largest ammunition handling point at the time.



The Raritan Arsenal Band of 1918 is one of the earliest Ordnance Corps bands ever organized.

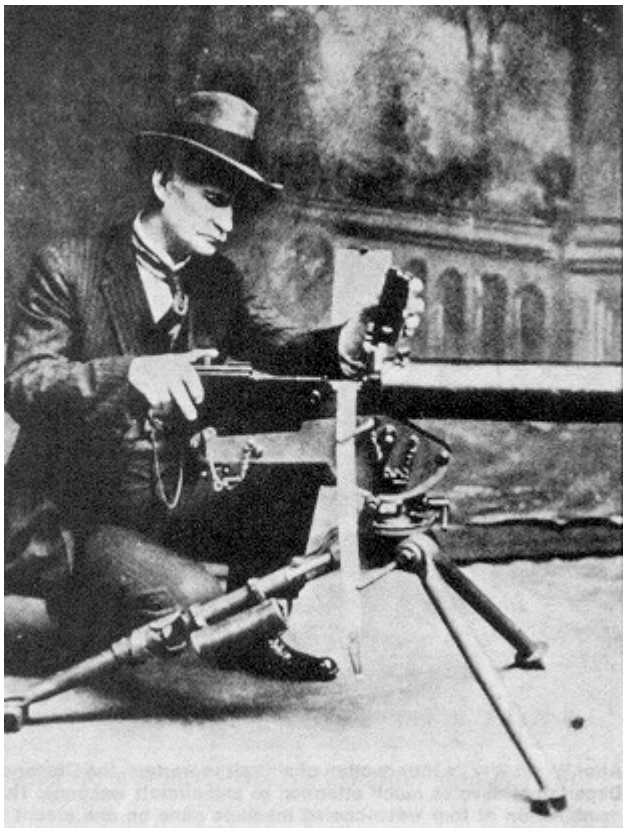
1907-1923

- **Army adopts the .45-caliber Colt automatic pistol in 1911, naming it the model M1911.**
- **The National Defense Act of 1916 increases the size of the Regular Army. Ordnance Department also expands and reorganizes. This act directs a survey of all small arms and munitions industries.**
- **The first commercial tractors and four-wheel drive trucks are procured in 1916 for use by artillery units.**
- **To increase rifle production in World War I, factories producing .303-caliber rifles for the British are converted to .30-caliber production for U. S. Forces. Resulting hybrid is known as the U. S. rifle, Model 1917.**
- **When the United States declares war on Germany in April 1917, the Regular Army has only 97 Ordnance officers available. By war's end, strength reaches 5,954 officers, 62,725 enlisted men, and 88,150 civilians.**
- **Aberdeen Proving Ground, MD, is established in fall of 1917 to improve Army test facilities.**
- **As the United States becomes involved in World War I, GEN John J. Pershing assesses ordnance materiel available to his forces to be not more than a nine-hour supply of artillery ammunition. This lack of preparedness forces the United States to fight most of World War I with British and French materiel, except for small arms.**
- **The cost of ordnance to equip a World War I division, with supporting forces, is calculated at $6,575,000, or about $164.37 per man.**
- **The first meeting of the Ordnance Association is held at Aberdeen Proving Ground, MD, Oct. 24 and 25, 1919. On Sept. 7, 1920, the first constitution and bylaws are submitted to the membership for approval.**
- **The National Defense Act of 1920 reorganizes the entire Army. New concept lasts 30 years until further reorganization in 1950. Ordnance now headed by a major general.**

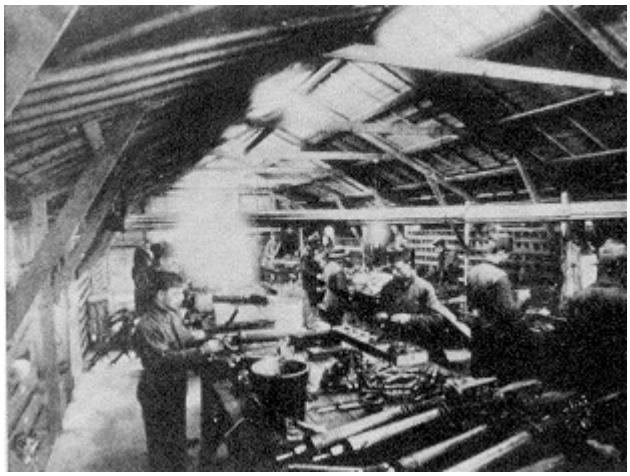


A corner of the machine shop at the United States Ordnance Base, Mehun-sur-Yevre, France, 1918.

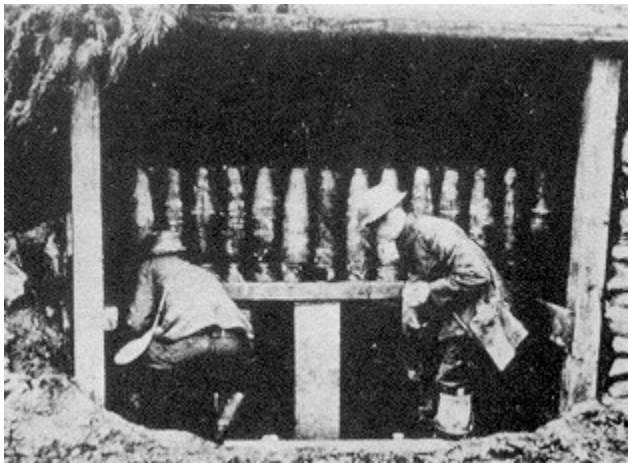
Unloading supplies from ships at a base depot in France, 1918.



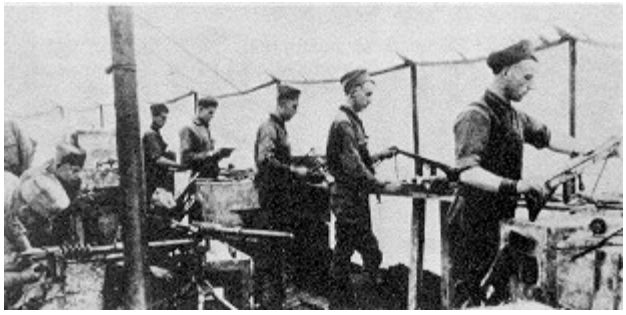
John M. Browning and his famous machine gun.



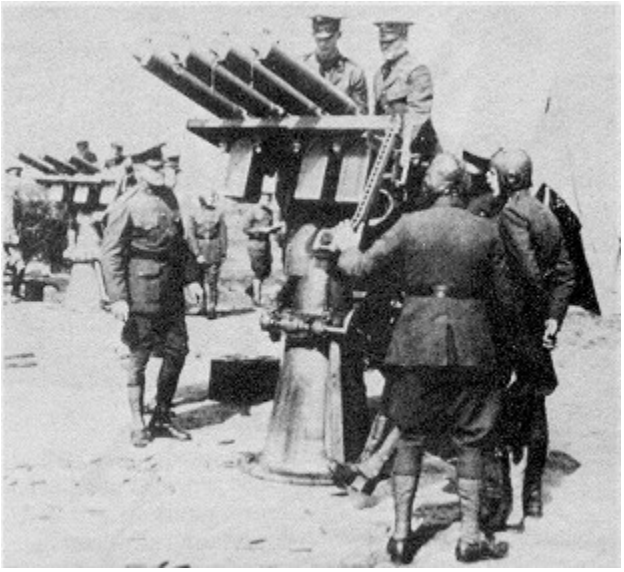
Small arms repair with the American Expeditionary Force, 1918.



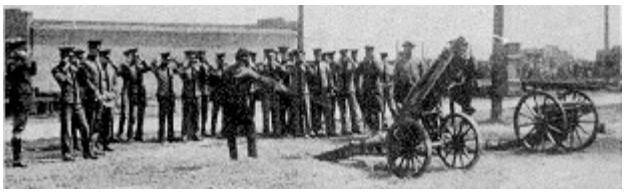
Storing ammunition in France during World War I, 1918.



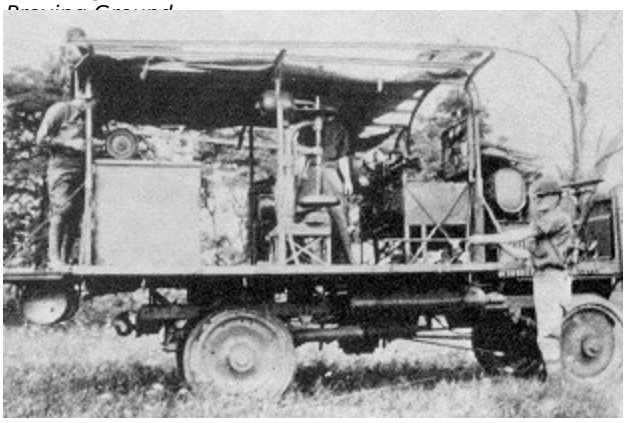
Personnel of the Mobile Ordnance Repair Shop at work supporting the 42nd Division, LeCheppe, France, July 4, 1918.



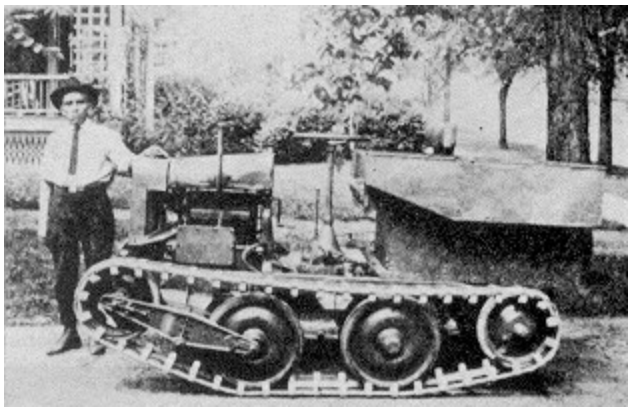
After World War I's introduction of aircraft to warfare, the Ordnance Department devotes much attention to anti-aircraft weapons. This combination of four water-cooled machine guns on one mount is one of the ideas that seems good at the time.



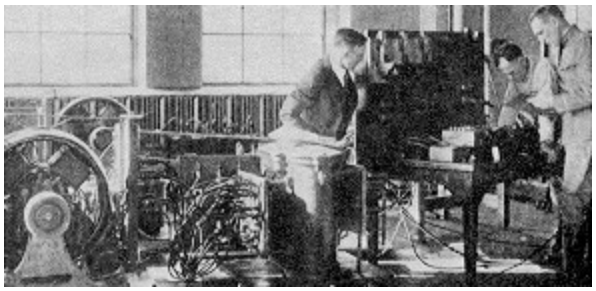
West Point cadets of the 1920s receive extensive ordnance training, not to qualify them as ordnance officers, but to make them better qualified combat arms officers. As a conclusion to their ordnance training, the entire class is taken to Frankford Arsenal and Aberdeen Proving Ground for on-the-spot demonstrations and training. These cadets are receiving some of that annual instruction at Aberdeen Proving Ground.



This ordnance repair shop truck is one of many in use in maintenance companies of the 1920s.

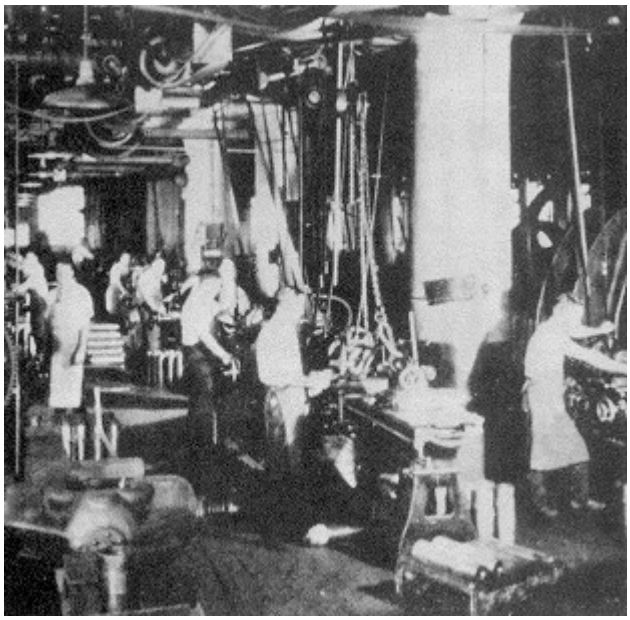


Development of tracked vehicles continues through the 1920s. This is one of the experimental vehicles tested as a possible reconnaissance vehicle.



In the early 1920s, ordnance officers are trained in a combination of facilities, including the Electrical Laboratory, shown here, at the Massachusetts Institute of Technology. Other training is given at Watertown Arsenal, also in Massachusetts.

The 33rd Ordnance Company, Rock Island Arsenal, goes about their routine business of repairing equipment in the early 1920s.



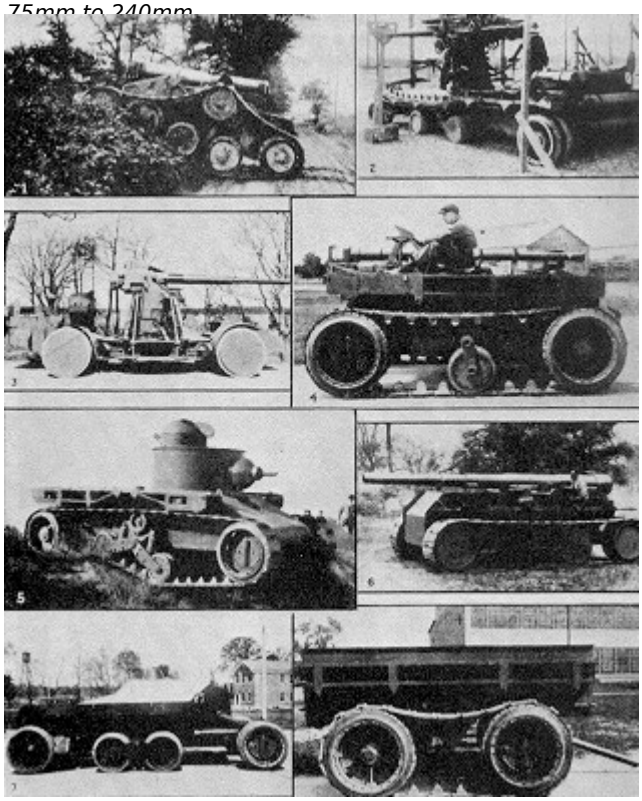
Frankford Arsenal Shell Shop personnel work on machining 5-inch shells for the Navy. In the late 1920s the arsenal has the capability of machining common steel shells and shrapnel for calibers from 75mm to 240mm.

A reorganization in 1921 assigns certain arsenals specific activity classes. Some of these: small arms, Springfield Armory; small-arms ammunition, Frankford Arsenal; cannon, Watervliet Arsenal; mobile artillery carriages, Rock Island Arsenal; heavy artillery carriages, Watertown Arsenal; fire control apparatus, Frankford Arsenal; artillery ammunitions, Picatinny and Frankford Arsenals; tanks and tractors, Rock Island Arsenal; proof, Aberdeen Proving Ground, Rock Island Arsenal, Frankfortd Arsenal, Picatinny Arsenal and Springfield Armory.

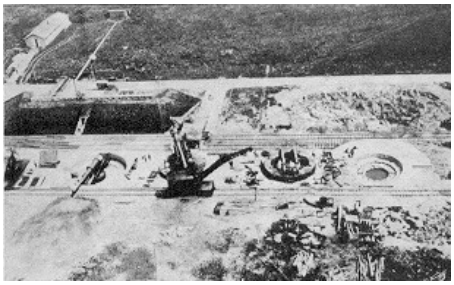
In the ordnance planning of 1922, the United States is divided into 13 Ordnance Districts for the purpose of decentralizing procurement and production of ordnance materiel in the event of an emergency.

Even in the relatively slow years such as 1922, Springfield Armory is kept active by the manufacture of 20, 202 rifles.

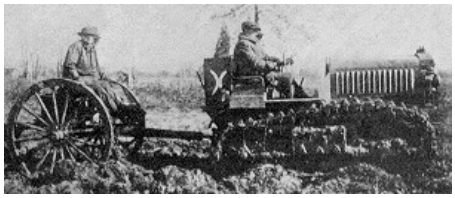
In 1932, the .45 Colt automatic pistol, model 1911, receives its first and only modification, thus, becoming the model M1911A1.



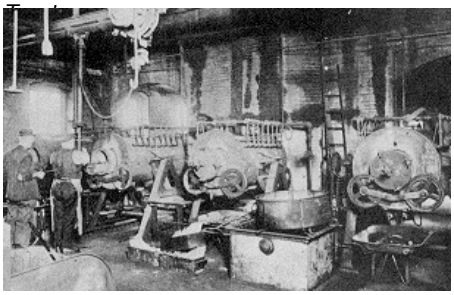
A million-dollars' worth of ordnance development. These 8 pictures represent different projects completed by Walter Christie in the late 1920s for which he was paid approximately one million dollars. All have been tested. They are: 1. Christie self-propelled mount for the 8-inch howitzer; 2. 4.7-inch anti-aircraft gun motor carriage (Christie); 3. 3-inch anti-aircraft gun, model 1917, mounted on a Christie truck; 4. Christie mount for 75mm gun and 105mm howitzer; 5. Christie tank (first construction); 6. Christie self-propelled mount for 155mm gun, G.P.F.; 7. Christie wheel-and-track tank; 8. Christie combination wheel-and-track 3-ton trailer.



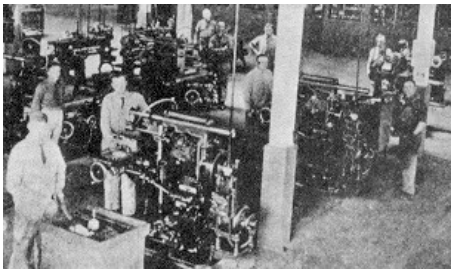
The coastal defense gun testing area of Aberdeen Proving Ground in the mid 1920s.



Experience in World War I alerts the Army to the difficulties in moving their newer, but heavier artillery pieces on the battlefield. Using commercial tractors seems like a quick solution to the problem. Exhaustive tests begin on automotive equipment. Tractor shown is the model 1922 Aberdeen



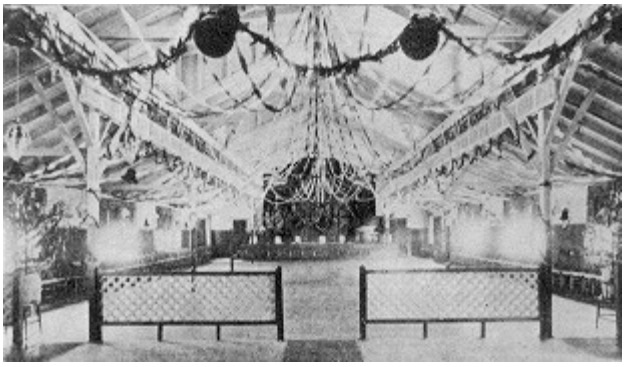
Furnaces used to carbonize rifle components at Springfield Armory in the late 1920s.



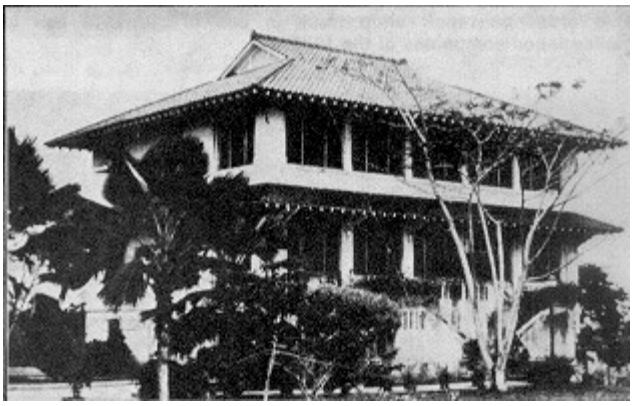
Enlisted ordnance specialists receive their training at Raritan Arsenal, NJ, during the early 1920s. The Trades Department, shown here, is one of several that turn out highly skilled odnnance soldiers.

1924

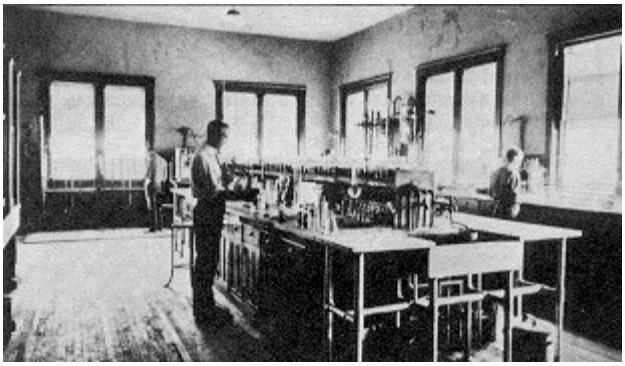
- **The Old Hickory Ordnance Powder Factory at Nashville, TN, burns Aug. 10, 1924, resulting in the loss of 50 million pounds of smokeless powder. Total loss is over two million dollars worth of machinery, buildings and powder.**
- **In 1924, the Ordnance Department warrant officer strength reaches 55.**
- **Army Industrial College is founded in 1924 to train officers in logistics.**



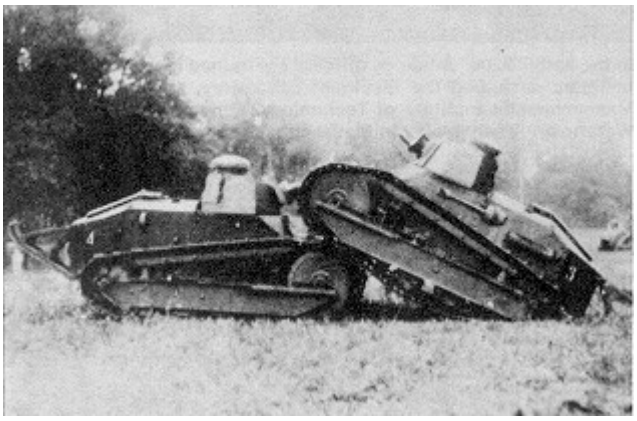
The 33rd Ordnance Company Service club at Rock Island Arsenal about 1924.



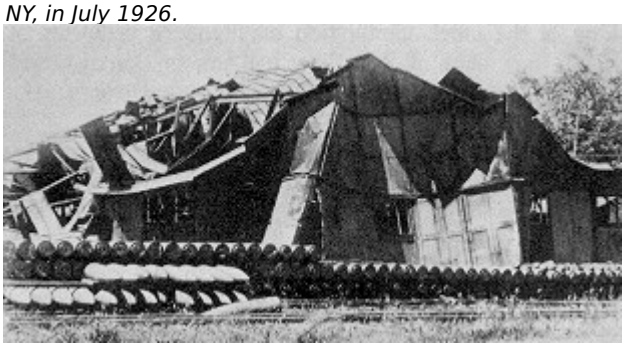
Panama Ordnance Depot commanding officer's quarters, 1925.



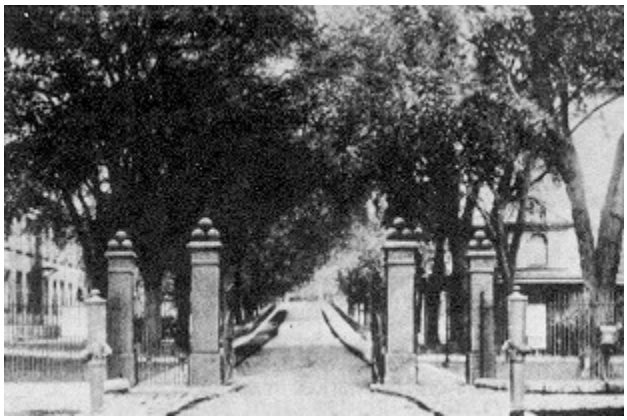
Part of the Picatinny Arsenal Research Laboratory around 1926.



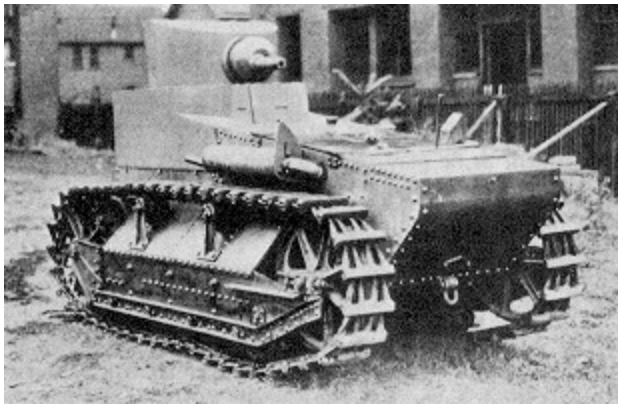
What happens when tank meets tank is discovered during a sham battle held by the 312th Infantry's reserve officers during their training at Staten Island, NY, in July 1926.



Some of the destruction caused by the July 10, 1926, explosion at Lake Denmark Naval Ammunition Depot. The buildings shown are part of Picatinny Arsenal which received extensive damage.

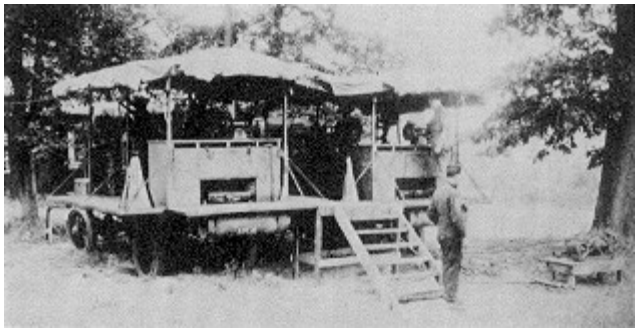


The main entrance to Watervliet Arsenal in 1927.

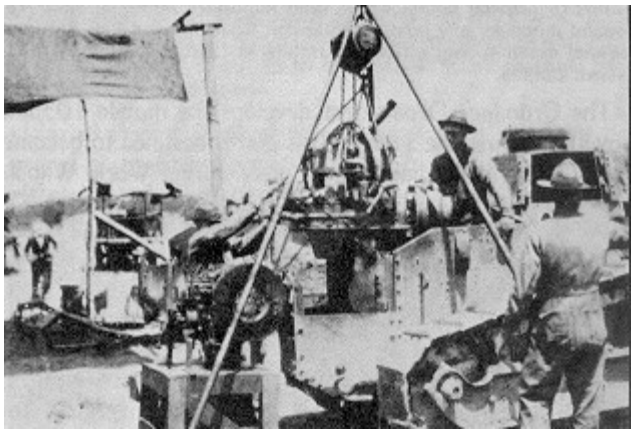


The Army's other M1 tank. This light tank is brand new in 1928 and represents the Ordnance Department's best efforts in the armored field.

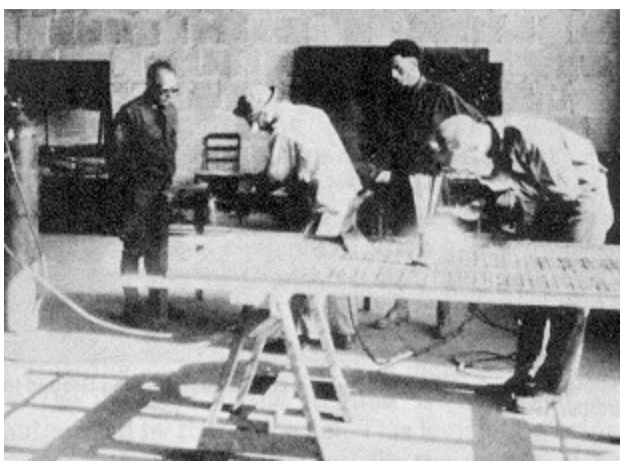
A 1929 version of an ordnance field repair site.



A mobile maintenance shop on two trucks, is set up for operation in 1929.

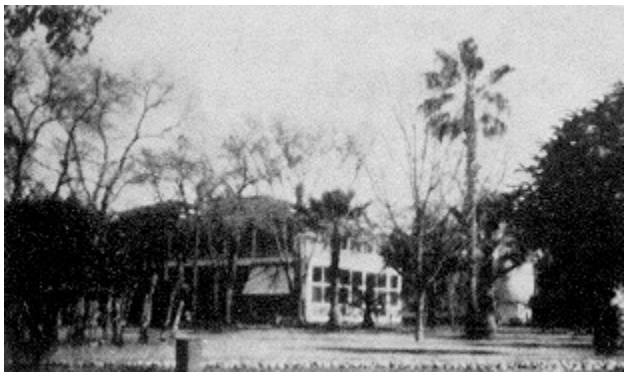


Repairing a 6-ton tank in the field in early 1929.



The Ordnance Specialists School at Raritan Arsenal trains ordnance soldiers to perform varied duties. The picture shows welding training in early 1930.

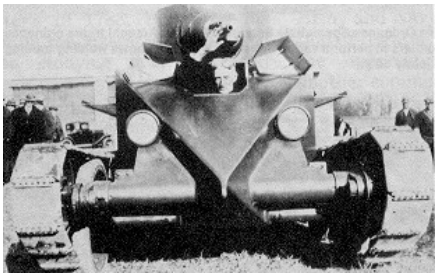
The 1930 version of portable indirect fire weapons. This is a 75mm mortar broken down for transportation into five one-man loads.



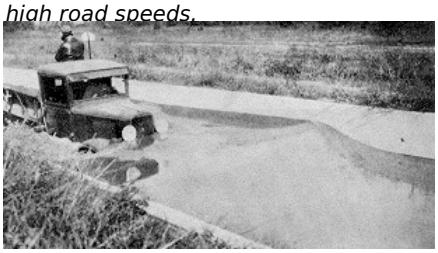
Ordnance arsenal commanders hold important positions and are housed much as any post commander. Shown is the San Antonio Arsenal commanding officer's quarters in 1930, occupied by MAJ Everett Collins.

Testing a 16-inch coast artillery gun at Aberdeen Proving Ground in October 1930.

- **The Ordnance Department develops the mobile 105mm howitzer during the 1930s. This gun is destined to become the principle divisional artillery piece during World War II.**
- **One of the chief ammunition maintenance problems of 1931 is the culling of .30-caliber ball ammunition of World War I vintage for issue. About 20 percent are unsuitable for use.**



The Christie wheel-and-track tank being driven in early 1931 by J. Walter Christie, the inventor. The tracks and turret can be removed, becoming a wheeled vehicle with high road speeds.



A light truck undergoes the water course during cross-country mobility tests, in 1935, at the automotive laboratory, Aberdeen Proving Ground, MD. The course consists of a concrete tank 250 feet long by 15 feet wide by 4 feet deep.

In early 1940, the first M3 medium tank to be produced by a private industrial company emerges from the American Locomotive Co., Schenectady, NY. The M3 is armed with a 75mm gun and powered by a Wright airplane engine.

Total armor procurement for 1932 is three T3 convertible tanks.

In 1934, $2,947,150 is authorized for renovation and modernization of Aberdeen Proving Ground.

A new handgun, the Smith & Wesson .357 Magnum revolver, appears on the market in spring 1935.

The Garand rifle is officially standardized in January 1936 as the M1 rifle.

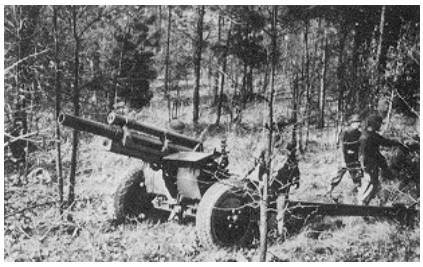
In mid 1936, a new law provides that: "The Secretary of War is hereby authorized to offer periodically [to civilian employees] at such of the establishments of the Ordnance Department as he may select a cash reward to the suggestion, or series of suggestions, for an improvement or economy in manufacturing process or plant, submitted and adopted for use. . . ."

Because of peculiar difficulties encountered in the training of civilian components in the Field Service, Eighth Corps organizes a four-week training maneuver by truck convoy through South Texas. Reserve officers, ROTC cadets and the regular Ordnance Company (Medium Maintenance) assigned to the 2nd Division, Fort Sam Houston, TX, will cover 1,000 miles. The convoy will leave with 20 trucks and 85 personnel, June 19, 1939.

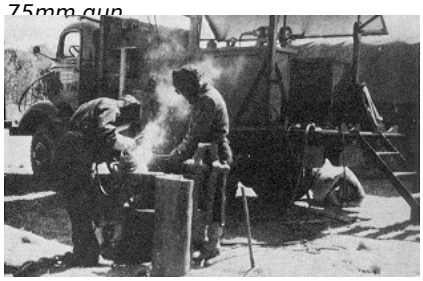
In mid 1940, the Ordnance Department received approval to produce a new vehicle, the half-track scout car T14. The speed with which detailed changes in design were made is astounding. On Oct. 1, a certain assembly was considered. In two weeks, detailed plans, specifications and full-scale mock-up models were created and submitted. A few revisions were decided upon, and the final plans were turned over to the Diamond T Motor Car Co. The first experimental units were soon ready and tested Nov. 8. The final accepted unit was finished by Dec. 4 and is now used as the model for full mass production.

The first ordnance battalion to ever be assembled operated successfully during Third Army's field exercises in April-May 1940. A major change in the previously untried theories was that within the first 12 hours of the exercises, the location of the office of the corps ordnance officer was rushed from his battalion bivouac area to the forward echelon of corps headquarters from which it never moved. Communication failure and the need of the

The new scout car in 1940 is armed with one .50-caliber and two .30-caliber machine guns, has a two-way radio and can travel 50 mph.



One of the new weapons announced in 1940 by the Chief of Ordnance is the new 105mm howitzer. It will be used as a supporting weapon for the 75mm gun.



The Ordnance blacksmith of 1940 uses a mobile machine shop.

In 1940, Frankford Arsenal principally manufactures optical instruments and small arms and artillery ammunition.

By the end of 1940, the six ordnance manufacturing arsenals of the Army are Watervliet, NY: artillery weapons; Picatinny, NJ: propellent powder and the loading of artillery ammunition; Watertown, MA: gun forgings and centrifugal casting, railway, seacoast and anti-aircraft artillery; Frankford, PA: small arms ammunition, artillery shells and fire control instruments for all classes of artillery; Rock Island, IL: mobile artillery, gun mounts and tanks; and, Springfield, MA: small arms.

A new development called the "Ordnance Training Center" is called into existence in mid 1941 to provide a single agency to deal with all matters of ordnance training. The center is being constructed at Aberdeen Proving Ground, MD. It will be equipped to provide the entire Army with a sufficient number of trained men to maintain and handle the supply of ordnance equipment and ammunition for all branches of the service, wherever they may be.

The only government-owned, government-operated arsenal of the Ordnance Department established during the war is activated Oct. 6, 1941. Redstone Ordnance Plant is the only manufacturing arsenal located below the Mason-Dixon Line. It is situated 12 miles south of Huntsville, AL. It becomes the seventh of the manufacturing arsenals.

The Army Industrial College closed its doors when the last class was graduated Dec. 23, 1941. Decision to close the college was reached only because of the greater need for experienced procurement personnel in the field. The college was established Feb. 25, 1924.

The Army's need for trained technical personnel is vividly brought home to industrial management. By late 1942, the International Harvester Co. has recruited two battalions and is now raising one battalion from its own organization. The J. I. Case Co. and the Allis-Chalmers Manufacturing Co. each contributed one company. The American Road Builders Association, with the cooperation of the highway departments of many states, has furnished trained personnel for a number of maintenance companies.

In February 1942, the Office of the Civilian Defense discontinued the civilian bomb disposal squad. Its place is taken by the Ordnance Bomb Disposal Company. Only ordnance personnel are now charged with the removal and disposal of unexploded bombs.

.50-caliber machine gun ammunition in fabric belts are being prepared for crating in 1941. Fabric bels would gradually give way in 1945 to steel links.

The new M3 medium tank demonstrates its strength during a trial run in March 1941. The first of these tanks was paid for by contributions from Chrysler employees and presented as a gift to the Army.

The new ordnance mechanics at Aberdeen now do many of the tasks formerly performed only by men. These women are repairing a 28-ton M3 medium tank in 1942.

In new Caledonia, 1942, ordnancemen assemble vehicles which have arrived crated in sections. By October, 25 men would complete six vehicles a day on this assembly line.

At 10 a.m., April 30, 1942, the first of the Army's new guns comes off the production line. Known officially as the M3 submachine gun, this weapon at first glance resembles the equipment used by "Buck Rogers."

By May 1942, the Ordnance Department has under construction or in production 35 powder, explosive and pyrotechnic plants; three ammunition proving grounds; 25 ammunition loading plants; two gun plants; three tank and combat vehicle plants; and 14 small arms ammunition and machine gun plants. This new facilities program will cost in the neighborhood of $3.5 million.

In June 1942, the Ordnance Department reorganizes, establishing four divisions: Industrial Division, Military Training Division, Technical Division and Field Service Division. The Tank-Automotive Center and a group of staff branches are also established.

In August 1942, the Ordnance Department announces that the Tank-Automotive Center is to be established in Detroit as a unit of the Office of the Chief of Ordnance, to operate independently of the Detroit Ordnance District and to deal with all matters pertaining to ordnance automotive-vehicle production.

On March 7, 1943, Redstone Ordnance Plant becomes the Redstone Arsenal. Its production now includes chemical shells, grenades, shell bursters, and demolition explosives.

The first contingent of 60 WACs arrived at Aberdeen Proving Ground, MD, April 30, 1943. They are assigned to the Research Center, performing such work as testing small arms and automotive equipment, drafting, radiography, spark photography, ballistic measurements, stenography and typing. They also operate overhead cranes and work in various machine shops.

About 300,000 women are employed in War Department activities in November 1943. They work in arsenals and depots. Almost 10 percent of the skilled workers and almost 35 percent of the unskilled workers are women. They produce and assemble guns, planes, tanks, and ammunition. They run 15-ton cranes, operate complex milling and boring machines, drive trucks, rivet airplane wings and fill hundreds of other mechanical jobs.

The newest addition in mid 1942 to the Ordnance Department's training staff is a likeable blunderer named "Joe Dope." Around the globe, officers and enlisted men are learning the importance of proper care of their equipment. The Canadian government's request to adopt "Joe Dope" is a pronounced indication that humor, as a training medium, is gaining wider military acceptance.

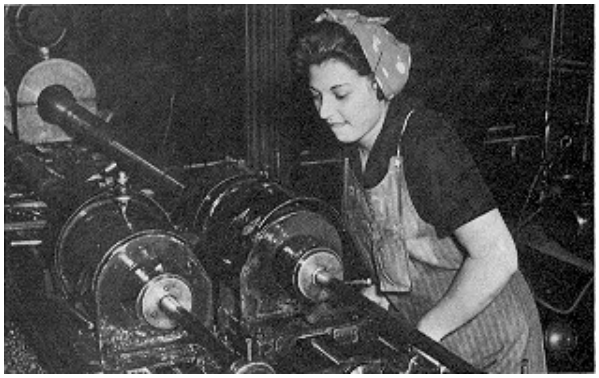
Personnel of ordnance ammunition companies exhibit great personal heroism during the Anzio beachhead operation in January 1944. This is best illustrated by the average loss, in more than 100 ammunition fires caused by the enemy shelling and bombing, of less than 30 tons per fire. At the peak of operations, there were approximately 60,000 tons of Class V supplies stored on the beachhead.

Two flages are added in 1944 to the galaxy of colors. One is the flage of the Ordnance Department of the Army; the other is the flag of the Army Ordnance Association. Each is symbolic of the importance of armament and industrial preparedness for victory in the present war and for the maintenance of peace in the years to come.

The Ordnance Department has under development in September 1944 more than 1,000 new weapons and types of equipment. Since Pearl Harbor, more than 300 new and improved weapons have been standardized and issued to the troops. These include weapons used by s and oth

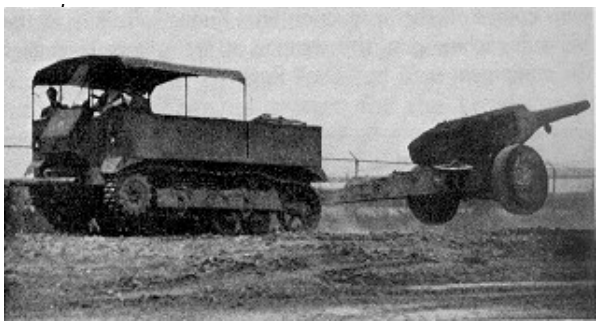
The Ordnance Sergeant, published by the Ordnance School at the Ordnance Training Center, observes its first anniversary in May 1942. Within a year, this journal has won itself a high place among ordnance technical publications.

Women Ordnance Workers, known as WOWs, were symbolized by Rosie the Riveter, painted by Norman Rockwell as a tribute to these women. Rosie rivet airplane wings in an ordnance plant. (Reprinted from The Saturday Evening Post, 1943. The Curtis Publishing Co.)

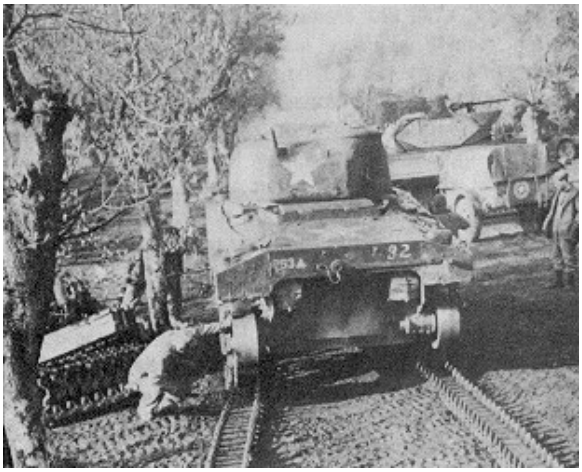


Miss Frances Kantrowitz, a WOW at Watervliet Arsenal, drills the bore of a small caliber gun barrel in 1943. She wears the WOW bandanna, a special headgear designed by the Ordnance Department for women ordnance workers.

In 1943, a series of posters are designed and published by the Ordnance Department to stimulate war production in armament plants throughout the

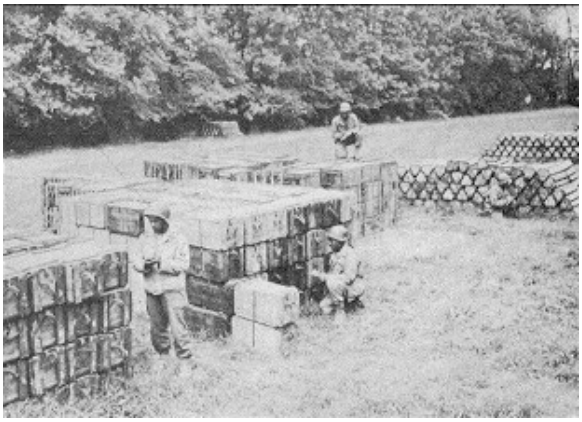


The Army's new 1943 M5 high-speed tractor will be used as a prime mover for the 105mm and 155mm howitzers and the 4.5-inch gun.

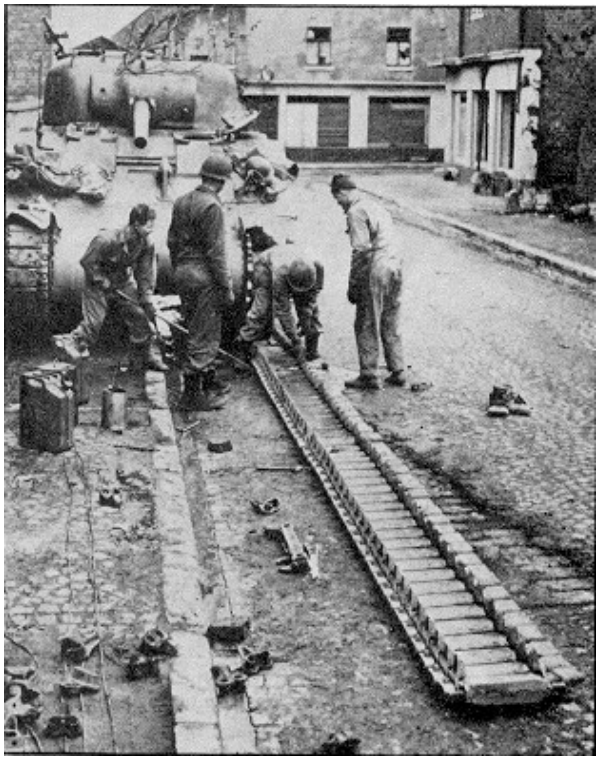


Changing tracks on a Sherman tank at Presenzano, Italy, in late 1943 on the so-called "Gateway to Rome."

Minor repairs, such as thrown tracks, are made at forward maintenance posts like this one set up in 1944 in an abandoned Italian farmhouse. The posts were normally located only about 400 yards behind the front lines.



Somewhere in France in 1944, ordnance soldiers stack shells by type to facilitate issue.



The maneuverability of tanks and other tracked vehicles is greatly hampered by mud along the front lines during the Rhineland Campaign. Confronted by a problem more serious than anticipated, ordnance personnel, in late 1944, quickly designed and started production of track extensions at civilian manufacturing facilities in France and Belgium. Before completion of the program, more than one million extensions would be made and welded to tank tracks. Here, track extensions are being put on the track of a medium tank.

Ordnancemen assemble repaired small arms for reissue to troops during the Anzio operation in January 1944.

In early 1945, the Allied armies overrun and divide the German forces in Italy. German air activity by this time is so slight that dumps a few miles behind the front are not camouflaged. This is one such dump where ammunition for 155mm howitzers is being restacked.

WACs load generators on a truck at Aberdeen in 1945.

Soldiers of Task Force Frost use a "slave kit" mounted on a one-ton trailer to heat a jeep engine during tests of cold-weather starting devices at Camp McCoy, WI, in 1946.

The Ballistic Research Laboratory at Aberdeen Proving Ground conducts research in ballistics and in the relevant branches of physics, chemistry, mathematics and engineering. This photo, taken in 1946, depicts a WAC measuring missile acceleration in the ballistic camera control room.

In early 1945, a highly mobile welding shop on wheels that can traverse ground impassable to most previous maintenance vehicles is developed by General Electric Co. This vehicle will enable emergency repairs of damaged war equipment to be made right on the battlefield.

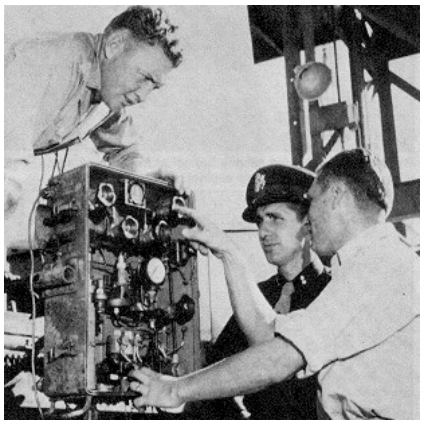
The slow process in which molten TNT is poured, cooled, hardened and packed into shells by hand, a little at a time to prevent formation of air cavities that may cause premature explosion, is a thing of the past. The Ammunition Division of the Ordnance Department developed, in 1945, two machines to load shells. Now being standardized at all ordnance plants, the machines are expected to save five million man-hours this year and greatly speed up the production of needed artillery ammunition.

The most notable development of the Ordnance-civilian industry team during World War II is the first nuclear device.

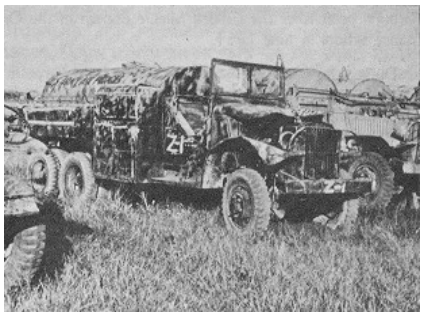
As the last trucks and tanks in a 36-month-old test convoy rumbled to a halt in San Antonio, TX, in early 1946, synthetic rubber tires were declared ready for rugged duty. The 24-hour-a-day testing, done by the Ordnance Department, has made synthetic tires "come of age." In three years of operation on the 185-mile course consisting of 70 percent hard surface highway, 15 percent cross-country terrain and 15 percent gravel roads, more than 25,000 tires have been tested on hundreds of vehicles. All equipment is being transferred to Aberdeen Proving Ground, where operations will continue on a limited basis.

Seventh Army Headquarters ordnance officers have established a successful ordnance technical school at Heidenheim, Germany, to assist veterans in preparing for peacetime jobs. The nine courses offered, in March 1946, are body and fender work, carburation, diesel engine, electric arc welding, general automotive, internal combustion engine, machine shop, oxyacetylene welding and watchmaking.

The first general purpose computer is installed in the Ordnance Ballistics Research Laboratory at Aberdeen Proving Ground in 1946. ENIAC (electronic numerical integrator and computer) contains almost 18,000 vacuum tubes, occupies a 30-by-50 foot room and weighs 30 tons. Thus the Information Age is born.



A guided missile technician, an Army Ordnance proof officer and a German scientist discuss the V-2 ground controls before firing a test rocket in 1948. German V-2 rockets captured at the end of World War II became the foundation of the United States missile development program.



At the outbreak of the Korean War in 1950, thousands of vehicles that had remained on various Pacific Islands at the end of World War II are salvaged, repaired and reconditioned, saving more than a billion dollars. These salvaged vehicles await repair.

Mid 1946 sees the Ordnance School, wartime alma mater of 70,000 officer and enlisted students, redesigning and consolidating courses. Since time was critical during the war, the school concentrated on turning out specialized technicians -- men who were experts on only small phases of the tremendous job of maintaining ordnance equipment. Now, however, authorities plan to construct longer, more inclusive courses, once again training general ordnancemen who can perform competently in any job.

In September 1947, the Ordnance Department takes part in the "Instrumentation of Tomorrow" exhibition in Chicago. The scope of the exhibit clearly demonstrates the progressive manner in which the Department maintains a high standard of instrumentation.

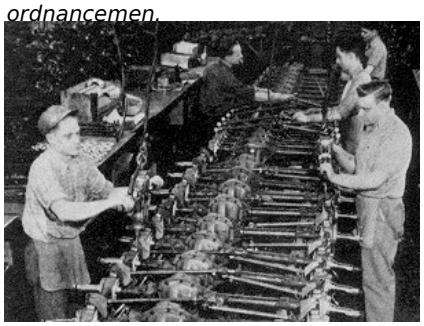
Firing tests begin in 1947 on Corporal E, a high altitude rocket developed by the Ordnance Department. The first of the type was fired successfully at the proving ground at White Sands, NM, and the results are being studied. Ten of the new missiles have been ordered and will be fired on a regular program of high altitude investigation.

The Ordnance Department has been given sole responsibility, in November 1947, for research and development, procurement, inspection, storage and issue of explosives, explosive devices for mine field clearance and demolition, fuses, firing devices and related auxiliary equipment. This responsibility is transferred to Ordnance from the Corps of Engineers.

Shortage of magazine storage space for the large quantity of ammunition on hand has led to the development of burying bombs in the earth to preserve them. Called "Operation Buried Alive," this new project, still in the experimental stage in January 1948, could result in substantial savings.

The Ordnance Department is using, in mid 1948, a "can opener" to inspect some of its "canned" guns and other items to determine whether storage in metal containers preserved them effectively. Guns were in excellent condition and ready, almost without exception, for immediate use. Only slight specks of rust and corrosion were found on any of these, although they had been in cans about two years.

As regiments come off the line in Korea in 1953, all weapons and equipment are inspected and repaired immediately with the assistance of American ordnancemen.



Although the guns have been stilled in Korea, the basic dangers that have faced the United States since before World War II remain largely unresolved. The importance of a close working relationship between industry and the military and the use of specialized plants to produce specialized items wherever possible cannot be overemphasized. A good example are these workmen at the Salisbury Axle Division, Fort Wayne, IN, completing some of the

Trainees at the Guided Missile School at Redstone Arsenal in 1955 learn to fight propellant and explosives fires.

Between World War II and the Korean War, the Ordnance Department launched a long range program to explore the use of two new forces -- nuclear fission and jet and rocket propulsion. Studies of German V-2 missiles led to significant American guided missile advances, a portion of the many initiatives being pursued by the expanding Ordnance research and development program.

The V-2 rockets being launched in 1948 at White Sands Proving Ground, NM, are seeking to explore further physical mysteries of the upper atmosphere by an intricate assembly of instruments installed in the missiles. Routine details of the firings are handled by the Ordnance Department, which prepares and launches the rocket. The Signal Corps tests ground communication links, and the Navy Department supplies telemetering equipment. Instruments in the rocket belong to the Air Force.

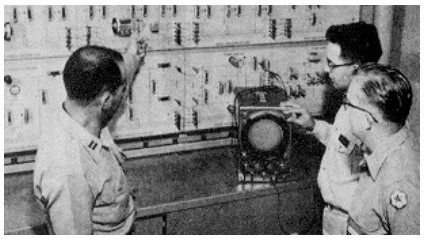
The Ordnance Training Command at Aberdeen Proving Ground establishes the Guided Missile Branch of the Ordnance School in June 1951.

During the Battle of the Soyang River from May 10 to June 7, 1951, X Corps exceeded all previous ammunition expenditures. On May 22, the artillery fired 49,986 rounds on the corps front. In 28 days, the corps expended 25,000 tons of ammunition and fired more than 1,800 tons in one day. During the entire battle, the 2nd Magazine Platoon, 69th Ordnance Ammunition Company, supplied ammunition without interruption. While a 500-ton capacity is its rated maximum, the platoon maintained a 1,163-ton-per-day level at the height of battle.

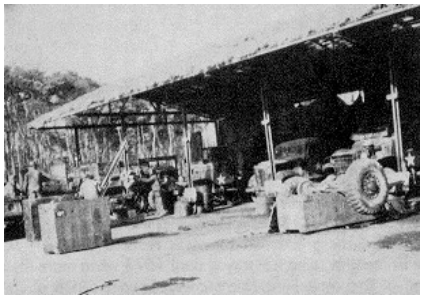
Ordnance scientists at Aberdeen Proving Ground develop a new grease in 1951 that can be used at temperatures below 65 degrees below zero and 125 degrees above. This one grease can lubricate Army vehicles instead of the six types formerly required.

In July 1951, the Guided Missile Branch becomes the Guided Missile Division and becomes a staff division of the Ordnance Training Command Headquarters at Aberdeen Proving Ground, MD.

In February 1952, Redstone Arsenal is designated as the location for the Provisional Redstone Ordnance School. One week later, the first class in the Guided Missile Officers' Course begins in a converted ammunition manufacturing building. Seven officers attend.



A demonstrator with printed circuits is used in 1955 in the early stages of electronic instruction at the Guided Missile School, Redstone Arsenal, AL.



A bombed out railroad supplies the steel framework for this maintenance shop in Korea in early 1955.

The 27th Maintenance Battalion supports the 1st Cavalry during the Vietnam War.

The first two of these huge cargo transporters, known as GOERs, arrived at Cam Ranh Bay, Vietnam, in August 1966. When other wheeled vehicles bog down in the mud, the GOERs are able to get through and keep the troops supplied.

Assembly line production of M47 medium tanks resumes in July 1952 at the Chrysler Detroit Tank Plant.

On Feb. 16, 1953, the school at Redstone is designated as a Class II activity under the jurisdiction of the Chief of Ordnance. The name is changed to Ordnance Guided Missile School.

A number of new missiles are revealed in 1954 to the public as they approach operational status -- Corporal, Honest John, Sparrow and Viking -- joining the Nike in our arsenal of missiles.

After passing through the glamorous stages of development and successful prototype tests, guided missile personnel are facing, in late 1954, the more mundane problem of maintenance in the field.

The Ordnance Corps, in 1956, develops the Executive Training Program that combines graduate level academic study with on-the-job experience at industrial plants for selected officers.

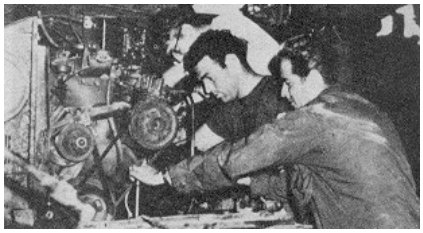
Sixteen years of experience and of trial and error through changing needs and times have matured EOD to where, by late 1958, it has a definite place in the ordnance field.

After a decade of historic progress in rocketry and guided missilery, the Army Ballistic Missile Agency at Redstone Arsenal embarks on a new era of challenge as its activities are shifted in 1960 to the control of the National Aeronautics and Space Administration (NASA).

By July 1962, the Pershing missile's development is on an accelerated schedule under the direction of the United States Army Ordnance Missile Command at Redstone Arsenal.

The Army's reorganization of 1962 disestablishes most technical services, including the Chief of Ordnance and his support staff. All logistics become generic.

In 1965, ammunition training, including EOD training, was relocated to Redstone Arsenal, AL. The school also became the directing agency for nuclear weapons training, although training was conducted at other locations. Following the addition of these new missions came a new name -- United States Army Missile and Munitions Center and School.



Thirty-five Army Reserve units are sent to Vietnam in 1968, including the 513th Maintenance battalion from Boston, MA. Members of the District Support Platoon are working on a 5-ton truck.

Among the many weapons systems evaluated in 1971 is the shoulder-fired MX47 Dragon anti-tank system. The weapon consists of reusable tracker, rocket-powered missile and disposable launcher.

Being tested in late 1971 is the MX191 flame weapon, which can fire a four-round clip of rockets equipped with incendiary warheads at the rate of about one per second.

In the spring of 1967, engineers developed and produced three modification kits to improve the M107 175mm and the M110 8-inch self-propelled artillery pieces. The task of applying the depot improvements was given to the 632nd Heavy Equipment Maintenance Company of the 79th Maintenance Battalion (GS) in Vietnam. The program began in May 1967. Due to the condition of the vehicles, all assemblies have to be completely disassembled, cleaned, repaired, modified and reinstalled. The shop personnel, consisting of 22 enlisted men, two officers and two technical representatives from Tank-Automotive Command, are formed into teams--eight turret artillery repairmen, eight automotive mechanics, four service repairmen and two supply specialists. Average turn-around time from gun site to the shop and back to the site is 20 days.

The Ordnance Corps Hall of Fame is officially established May 9, 1969.

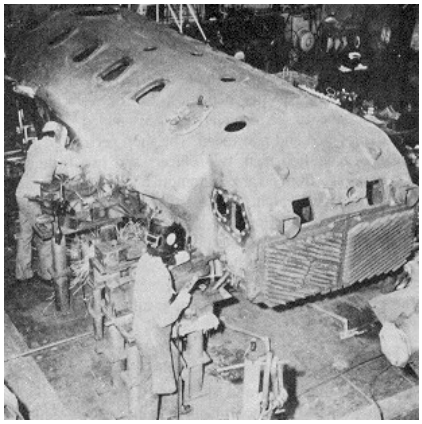
During the 1970s, all Army nuclear weapons training is transferred to the Missile and Munitions Center and School, Redstone Arsenal. The Department of Justice provides funds for the addition of hazardous devices training for selected U.S. and foreign civilian law enforcement personnel.

The Army Missile Command, working with Rockwell International, Thiokol and International Laser Systems, completes, in early 1973, Hellfire's technical feasibility prototype program. Hellfire is a laser guided "fire-and-forget" missile that will give attack helicopters the capability to hit stationary and moving targets.

In 1976, Career Management Field 63 is restructured, establishing the "systems mechanic."

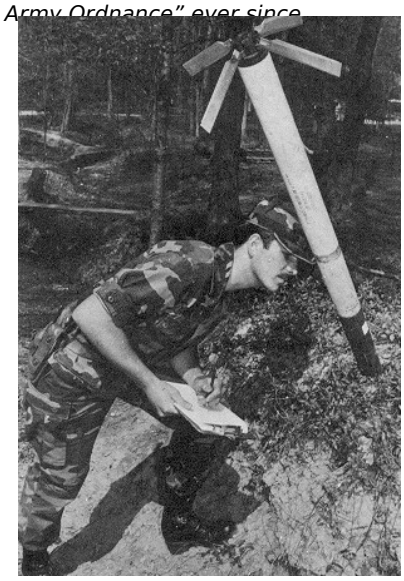
Until the early 1960s, tank production was kept at about 60 per month. In 1964, in the face of increasing budgetary pressures, the production rate was reduced to about 30 tanks monthly, where it stayed until 1973 when more than half of the annual increment covered modification of the M60A2. Today, in 1976, production rate has been reduced to about 15 new tanks per month.

In 1978, a program known as Weekend Military Occupational Skill Training begins. Reserve Components maintenance units that can cover travelling expenses to Aberdeen Proving Ground, MD, can now use the school facilities normally shut down on weekends as part of their monthly training.



The huge hull of the M60A1 tank indicates the complexities of the casting process in 1976.

With the establishment of the Ordnance Center and School commandant as Chief of Ordnance in 1983, Aberdeen Proving Ground, MD, becomes the true "home" of Ordnance for the first time after carrying the nickname for many years. The installation has been proclaimed as the "Home of U.S. Army Ordnance" ever since.



Explosive ordnance disposal technicians must identify and render safe both modern and obsolete pieces of ordnance. The 52nd Ordnance Group (EOD) has been established at Fort Gillem, AL, to coordinate EOD activities.

The first issue of The Ordnance Magazine is published in May 1983.

The first soldiers of the 782nd Maintenance Battalion arrive in Grenada Oct. 25, 1983.

The position of "Chief of Ordnance" is re-established in 1983 to provide a proponent for all Ordnance personnel.

Three ordnance soldiers, in Lebanon to teach maintenance and repair techniques for the M113 Armored Personnel Carrier, are among the 17 Americans killed by a terrorist bomb attack on the United States Embassy in Beirut, April 18, 1983.

After two years of dedicated effort, the Ordnance Corps Association is founded in a ceremony held Oct. 1, 1985 at the Ordnance Center and School, Aberdeen Proving Ground, MD.

The Ordnance Corps officially joins the Army's regimental system May 9, 1986.

A series of regional sites for maintenance and ammunition training are established to assist Reserve Component units in training. Known as Regional Training Sites-Maintenance or -Ammunition, these sites add a valuable resource to maintaining current training for units throughout the United States.

Operations Desert Shield/Desert Storm test Ordnance units in combat and the success rate is noted in a 100-hour coalition victory in Southwest Asia.

In 1994, a major reorganization of the United States Army Combined Arms Support Command (CASCOM) at Fort Lee, VA, results in the transfer of combat developments and training developments from the Ordnance Center and School at Aberdeen Proving Ground, MD, and the Ordnance Missile and Munitions Center and School at Redstone Arsenal, AL, to Fort Lee.

The Ordnance Magazine ceases publication in October 1994.

In the 1990s, distance-learning initiatives are developed to offer training via satellite to remote sites and to cut back on travel costs normally associated with many courses.

Evolving weapons systems, like this Bradley Fighting Vehicle and the M1 Abrams tank add to the challenge of maintainers and repairers in the Ordnance Corps.

The HERCULES (above), an upgrade of the M88 Recovery Vehicle, and the Palletized Loading System (below) are two of the many pieces of major equipment coming on line to support Ordnance Corps soldiers.

Even with the advent of highly sophisticated equipment, wheel vehicle repairers learn the basics before moving onto today's modern systems.

In Oct. 1994, a major reorganization of the United States Army Combined Arms Support Command (CASCOM) at Fort Lee, VA, transfers responsibility for combat developments, training developments and field evaluations from the Ordnance Center and School at Aberdeen Proving Ground, MD, and the Ordnance Missile and Munitions Center and School at Redstone Arsenal, AL, to CASCOM.

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As a result of the Electronic Maintenance Study the Ordnance Corps became the Army proponent for all electronic maintenance.

On Oct. 1, 1994, the Ordnance Electronic Maintenance Training Department was established as a department of the Ordnance Missile and Munitions Center and School. At the same time the 73d Ordnance Battalion was reactivated at Fort Gordon, GA, as part of the 59th Ordnance Brigade to support Ordnance Training at Fort Gordon.

The 59th Ordnance Brigade is activated at Redstone Arsenal, AL, to support the Ordnance Missile and Munitions Center and School. The brigade consists of two battalions, one at Redstone Arsenal, and the other at Fort Gordon, GA.

The United States Army Training and Doctrine Command, on June 9, 1998, announces a new Army division design which will change the make-up of Ordnance organizations in support [illegible]ns. The redesign is to evolve [illegible]s the 21st century.

Today's Ordnance soldier receives the best technical training possible. Here a soldier works with an M1A1 1500 turbine engine troubleshooting trainer, providing him with extensive training before he even sees an actual engine.

This publication was produced by the Ordnance Corps Corporate Affairs Office, Headquarters, U.S. Army Ordnance Corps, Aberdeen Proving Ground, MD. For more information on Corps' history, traditions, values, news, etc., check out the Ordnance Corps Home Page at *www.goordnance.apg.army.mil.*